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Rural Lines

RURAL ELECTRIFICATION ADMINISTRATION • U. S. DEPARTMENT OF AGRICULTURE

JULY
1962



New Uses for Rural Power.....See Page 10

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A Message from the ADMINISTRATOR

Among the many changes now taking place in rural America is a "merger" of city and country people. In scores of areas served by REA borrowers, one finds farmers, retired people, suburbanites, and "summer people" along a few miles of rural road.

This circumstance inevitably presents problems. Few city people have had experience with cooperatives, and to some managers and directors they seem slow to grasp cooperative concepts. One indication is their light attendance at annual meetings. City people do not understand such things as the necessity for reporting outages promptly or the practice of reading their own meters. Often summer residents consider "minimum" charges too high, failing to realize the heavy investment in the electric lines to their cabins.

But, given patience and good will on both sides, the possibilities for mutual good in this confrontation of town and country far outweigh the troubles. There are reservoirs of trained talent among the newcomers that, rightly tapped, may well contribute to the progress and growth of even the best cooperative rural systems.

Visiting new consumers and presenting them with informational material about the association, inviting them to use the co-op community room and kitchen for meetings, electing newer members to sit on the board of directors and adjusting the editorial content of newsletters to reflect the varied views and interests of a widening membership—these are some of the ways of assimilating new members. The future well-being of many rural electric cooperatives may well depend on how successful they are in this effort.


Administrator

Rural Lines

Editor: Samuel Levenson

Contributors to this issue: Ken Jones, Bernard Krug, Bart Stewart.

Cover picture: A new silhouette on the Virginia sky, this is part of a plant which extracts aplite and titanium in Hanover County. Its power needs are met by Virginia Electric Cooperative at Bowling Green.

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WHEN TO UPGRADE TELEPHONE SERVICE

RURAL LINES recently asked a number of telephone managers to comment on the 5-, 2-, and 1-party service now available for REA financing as an alternative to the 8-, 4-, 2-, and 1-party design. It continued: "When and under what circumstances do you think a borrower should plan to offer it? If it is offered, do you think there is a necessity for 4-party service in the base rate area?"

Four replies appear below.

William S. Slusher, Manager, Ben Lomand Rural Telephone Cooperative, Inc., McMinnville, Tennessee, says:

The obstacles involved in offering 5-party rural service and the circumstances under which it should be considered are closely tied together. Both are problems of finance.

First, for the individual system in question, how much will the conversion cost? Secondly, is the rural economy sufficiently strong to absorb the cost? It is felt that most systems will find the cost less than expected, and that rural areas are willing to absorb reasonable increases in order to receive a better grade of service.

Five-party service can and should benefit both the telephone company and the rural subscribers involved. These basic advantages should be understood.

1. 8-party rural service is just about as obsolete as the old magneto systems.

2. More than 90 percent of service complaints received are party line conflicts. These dissatisfactions can only be corrected by having fewer parties on the rural lines. Abuses of party line service are not the fault of the telephone company, but the company is held accountable for them.

3. 5-party rural service results in greater efficiency, both in central office equipment and outside plant. Improved

efficiency automatically provides more of a bargain for the subscribers.

4. 5-party rural service, properly evaluated and established, can provide rate improvement without a rate increase. When a 5-party rate is established, included in the rate are appropriate factors that would have to be considered if the 8-party rate were continued. This does not imply that the 5-party rate should absorb costs that should be pro-rated to 1- and 2-party subscribers.

5. Most all telephone plant (inside and out) needs to adjust for deficiencies and inefficiencies that have been created by unpredictable changes that have occurred since the earlier design stages. Conversion to a 1-, 2-, and 5-party service offers an excellent opportunity for such adjustment.

There is some question regarding the desirability of 4-party service in the event of a conversion to 5-party rural service. 4-party service outside the base rate area would naturally have to be eliminated. Inside the base rate area, it would largely be a matter of choice dependent upon the circumstances of a system—rate structures, quantity and economy of 4-party users, percentage of plant increase, etc. Economy would likely favor the elimination of 4-party service since more efficient line fills would be realized and billing would be simplified.

In closing, I offer the question: would you be satisfied with 8-party service?

David J. McKay, Manager, Golden Belt Telephone Association, Inc., La Crosse, Kansas, says:

Offering 1- and 2-party service in the base rate area and 5-party service in the rural area is in line with the progressive thinking that has made the REA telephone program successful. My personal opinion is that all companies should take a close look at this grade of service and plan on providing it eventually to all of their subscribers as the demand arises.

As in most of our planning, the economic situation within certain areas may be the prime obstacle. Many areas cannot presently carry the additional costs required to upgrade existing plant. However, in some cases 1- and 2-party service could be offered in the base rate area with a fairly small additional capital investment.

Where new construction is involved, it is necessary to take a close look at the population trend. In many areas of decreasing rural population, providing 5-party rural service today could result in idle and wasted plant within the next few years.

When telephone companies such as ours are planning to serve some of the sparsely settled areas with full area coverage, it is difficult to consider 5-party rural service in view of the fact that it requires all that modern day engineering, management, and REA have to offer in order to provide these areas with 8-party service and to stay within the limits of a reasonable rate schedule.

One of the exchanges we have acquired recently could be classed as a difficult area to serve because of the

low rural density. Extra long span construction should be used to serve this particular area but it does not lend itself well to 5-party rural service. This is because we are limited to an eight wire lead. In such cases, it would be wise to consider as low a line fill as possible on an eight wire lead with the thought of working toward an ultimate 5-party line fill.

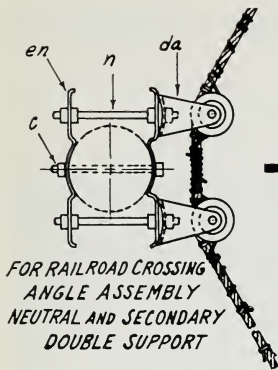
The advantages of 1-, 2-, and 5-party service are many. It seems that subscriber relations are always best on low fill lines. Experience indicates that toll revenue increases on such lines. A thorough study of toll revenue as related to line fill could result in a higher grade of rural service with little or no change in the monthly rental rates.

Where buried plant may be used, 5-party rural service is almost essential.

The question of 1- and 2-party service in the base rate area is almost entirely dependent upon the economy of a given area. In cases where subscribers within a base rate area are not willing to accept 1- and 2-party service initially, provisions can usually be made in the original engineering of a system for the addition of cable plant and central office equipment to accommodate higher grades of service at a later date. There is no question that present grades of service will seem completely inadequate in a relatively short period of time. Therefore, basic provisions for upgrading at the time of construction result in greater economy when the demand arises for additional or higher grades of service.

When should this service be offered? I believe that the advantages of 1-, 2- and 5-party service should be explained to existing and potential subscribers during the area coverage survey phase of a new project. In cases where such service and the associated rates with

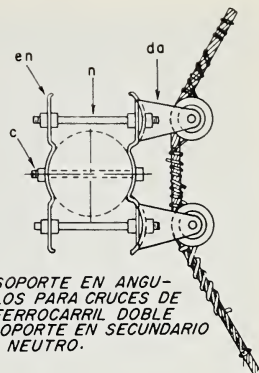
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REA Manuals Translated into Spanish

A young Nicaraguan engineer has made a major contribution toward establishing the first rural electric cooperative in that country—and more cooperatives in other Latin American countries as well—by translating some of REA's engineering experience and knowledge into Spanish.

The material deals with the construction of distribution lines and pole treatment.

The translations were made by Silvio T. Bolanos, section chief for a power company in the small Central American Republic of Nicaragua, after he had spent five months in the United States as a "trainee" in REA's Electric Engineering Division.

The 31-year-old electrical engineer wrote REA recently that the first rural electric cooperative in his country would be starting "very soon." It will receive its power from the National Light and Power Company of Nicaragua, which employs Mr. Bolanos as head of its standards and design department. The company serves 19 communities, including the capital, Managua, and desires to expand its transmission and distribution facilities to serve surrounding rural areas, through rural electric cooperatives.

One of the booklets is primarily a Spanish translation of a work well known to REA engineers as REA Form 804. Its English title, *Description of Units, Specifications and Drawings for 7.2/12.5 KV Construction*, has been simplified to *Manual de Construcción de Líneas de Distribución*. The other booklet is called *Planta de Tratamiento de Madera Estudio*.

Mr. Bolanos, who was in the United States from October 1960 to March 1961 under the sponsorship of the International Cooperation Administration, spent his last weeks here visiting several electric cooperatives and some manufacturing plants in Iowa and Louisiana. During his travels, he wrote to his instructors: "REA is the key opening all the doors I call." On March 30, 1961, the day before he left for home, he wrote, "I am really proud to have been an REA trainee."

REA is assisting Nicaragua in other ways to lay the groundwork for its cooperative rural electric system. Earl J. Smith, formerly with REA, spent several months working with the Nicaraguan government on this project. Wilfred C. Mast, able manager of Wayne County REMC, at Richmond, Indiana, has been "loaned" by his cooperative for the same purpose. □

Hints on Planning a Headquarters Building

by *H. F. Mabbitt*

Chief, Architectural Branch, REA

During the next 10 years, at least half of REA's electric borrowers will need to build new headquarters buildings or expand their present ones. It is not too soon for them to consider a few of the hundreds of items that will need to be determined: size and shape of lot; convenience to transportation facilities, utilities; fire protection and cost of insurance; topographic characteristics of site; nearness to banking facilities and post office; amount of taxes; development of adjacent property; possible relocation of roads and highways; future expansion of building.

Grouped around the lobby, or convenient to it, should be the cashier, the person in charge of member relations and the power use specialist. The most direct access should be to the cashier and to those offices which members have occasion to visit most frequently. Offices occupied by employees who do not deal directly with the public should be shielded from the view of persons in the lobby, so that the employees will not be distracted.

A drive-in window is a desirable feature of a new headquarters building, particularly in an area where parking is a problem. However, care should be taken not to place the window where it will force vehicular traffic to cross the walk in front of the main entrance door. Any canopy built over the drive must be high enough to clear anything that may be moved under it.

Parking areas for members and employees should be separate, with the area reserved for members more convenient to the main entrance than for employees. Parking should be permitted in front of the building only in case of necessity.

The main vault should be just large enough to provide fire protection for the most valuable property. For less valuable records, and for things that can be replaced, an old but equally fire resistant storage vault—not, by the way, in the most desirable office space—can be provided. Money should not be kept in a vault designed primarily for protection against fire.

To discourage prowlers from breaking into the vault, it is a good idea to install a floor safe, under a strong light that can be seen from the outside of the building. The light should be on all night.

It is not necessary for cooperatives to provide space in the warehouse of their main headquarters building for storing large quantities of transformers, wire, oil circuit breakers and the like. A less expensive, unheated, prefabricated type of structure set in the rear of the property has proved quite suitable for such things. In some areas, a platform unprotected from the weather, except perhaps for a roof, is all that is required. Since this type of facility is often unsightly, it can be shielded from view by proper landscaping of the property. The ground under and around pole storage yards should be treated or surfaced to prevent grass or weed fires. Worthless equipment, pieces of wire, wood and other junk should be removed periodically or destroyed. Gasoline pumps and storage tanks should be located a safe distance from buildings and other combustible objects.

But above all, officers of electric cooperatives should be the first to remember that, in a well-insulated building, a properly designed electric heating system is competitive in original and operating costs with all other heating systems! □



DEVELOPMENTS IN CHEMICAL BRUSH CONTROL

by Clifford J. Waldron, *Electrical Engineer, REA*

Cutting down trees and brush by means of axe, saw and machete was the first method used by operators of overhead electric and telephone lines in order to remove these hazards to continuous service. Though a certain amount of cutting—frequently with power tools—is still done for line construction, widening, and removing “danger” trees, it is no longer an all-inclusive method since the majority of plant species resprout, and cutting them back, even with power tools, becomes a repetitive operation which raises labor costs unduly.

As a result, bulldozers or other land-clearing machinery have come into greater use in recent years. It is necessary to make a careful study of the cost of owning and using such equipment to determine their feasibility. Other important factors are their adaptability to the terrain, tendency to create soil erosion, and the type of vegetation that may fill the void resulting from this type of plowing.

During the past 15 years much work has been done in development and use

of chemicals for application to woody plants. Of the hundreds of herbicides studied in laboratories and field tests, a few have proved useful in right-of-way maintenance. In the mid-forties 2,4-D, 2,3,5-T and ammonium sulfamate were developed. They were shortly followed by 2,4,5-T. Because some species of woody plants are tolerant to 2,4-D but not to 2,4,5-T and vice versa, the two chemicals are often used in combination when several different species of brush are present. Also, 2,4,5-T is less selective in its killing effect than 2,4-D, but somewhat more expensive.

Other chemicals used on a few species of woody plants include MCPA, silvex, amitrole and TBA. These do not kill as wide a variety of woody plants as 2,4-D, 2,4,5-T or ammonium sulfamate, but may be more effective on certain species resistant to the three principally used chemicals. Another material, fenuron, has been developed recently for dry applications to the soil.

Numerous ways have been devised for applying chemicals to woody plants.

Applications are made to the ground, to the base of the plants, to stumps, to notches cut in the base, by injection into the outer sapwood, or to the entire part of the plants above ground. Equipment is available for spraying on a small or large scale with pack sprayers or motorized ground equipment, or aerially by helicopter or airplane. Special tools are available for the injection method, as are spreaders for applying dry chemicals to the soil.

The usual way of initiating a chemical brush control program where there is considerable brush of medium to heavy density, is to spray all unwanted growth with a water solution of 2,4-D and/or 2,4,5-T or ammonium sulfamate. If sufficient brush resprouts the second year, another overall application is made; sometimes two years are allowed between the first and the second treatments. An alternative to the overall application of a water solution—when 2,4-D and/or 2,4,5-T are used—is the application of an oil-water emulsion to the lower two-thirds of the woody plants.

If the one or two large-scale treatments have been successful in substantially thinning the brush, a subsequent treatment will consist of applying an oil solution of 2,4,5-T (generally without 2,4-D) to the basal part of plants. This technique, though slower and more costly for the number of plants treated, is generally the most effective of the various spraying techniques.

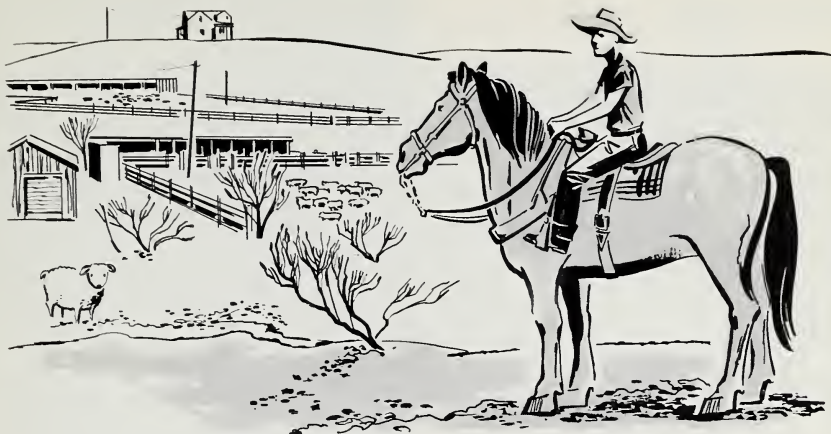
Care must be taken in the use of ester forms of the phenoxy compounds (2,4-D, 2,4,5-T, MCPA and silvex) where sensitive plants such as cotton, tomatoes, grapes, flowers and ornamentals are near the right-of-way. The esters evaporate to some extent, with the resulting fumes drifting to nearby sensitive plants. The high-volatile

esters (methyl, ethyl, isopropyl, butyl and amyl) are more hazardous to such plants than the low-volatile esters (such as butoxy-ethanol, butoxy ethoxy, propanol, capryl, ethoxy propanol, iso-octyl and propylene glycol butyl ether). At temperatures above 95° F. both types of esters may cause injury to nearby sensitive plants. Ammonium sulfamate presents no volatility hazard, nor do the amine forms of phenoxy compounds. Precautions must always be taken to prevent spray drift of the phenoxy compounds, either esters or amines, onto nearby sensitive plants.

As previously stated, results from a particular chemical vary with different species of woody plants. Its effectiveness is also influenced by such local factors as soil type, temperature and rainfall. It is important that manufacturers' cautions and directions for use be followed.

Chemical brush control is still under development and new herbicides or new uses for older ones are being recommended. It is important for those who use herbicides to keep in touch with the U. S. Department of Agriculture, state agricultural experiment stations and manufacturers of specific products for the most recent information.

Many tools, materials and techniques are available to the modern electric and telephone system operators for use in right-of-way maintenance. Much study and careful planning are needed for their best use. It is important that records, including date, location, kind of treatment and cost, be kept of portions of the system where woody growth is treated. By study of its own experience and comparisons with other systems, a borrower can usually effect a better degree of brush control at less expense. □



WHAT ELECTRICITY CAN'T DO

Electricity, as this publication never tires of saying, can do a lot of things.

It can, for instance, provide power, through Lyntegar Electric Cooperative, for a huge house high on a hill in west Texas, two miles south of Tahoka.

In the house live dozens of boys. Their domain stretches in all directions as far as the eye can see. There are horses to ride, a garden to keep, cattle, sheep, swine, rabbits, pigeons—and even a real live buffalo.

But it wasn't electricity that assembled these boys. It was two veteran Texas lawmen who decided that they were getting tired of seeing fresh-faced juvenile delinquents turn slowly but inevitably into hardened criminals. These two—Jack Miller, Tahoka police chief, and Jim Hollingsworth, former Dawson County juvenile officer and now a newspaper publisher—decided to break the chain, for some boys at any rate, by establishing the South Plains Boys Ranch. Here boys in “trouble” will live for about three months on an average. Then, if their

home environment is suitable, they will be returned to their parents.

So far, donations have been relatively small, and the two, along with 12 other community leaders listed on the board of directors, have paid most of the expenses out of their own pockets. The 340 acres were donated by Chief Miller.

“Adult criminals often return to crime, but young offenders, with the right care, can become good citizens,” says Hollingsworth.

Lyntegar Electric is an REA borrower which serves 11,000 consumers over 4300 miles of line. It has both humanitarian and economic reasons for welcoming the new consumer in its rural area. The co-op's present loan estimates call for it to connect eventually 13,500 consumers on 4800 miles of line. It has returned to REA, in round figures, \$1,500,000 on principal, \$800,000 interest, and \$928,000 in advance payments.

(Adapted from an article by Gayle Essary in the April 1962 issue of Texas Co-op Power.)

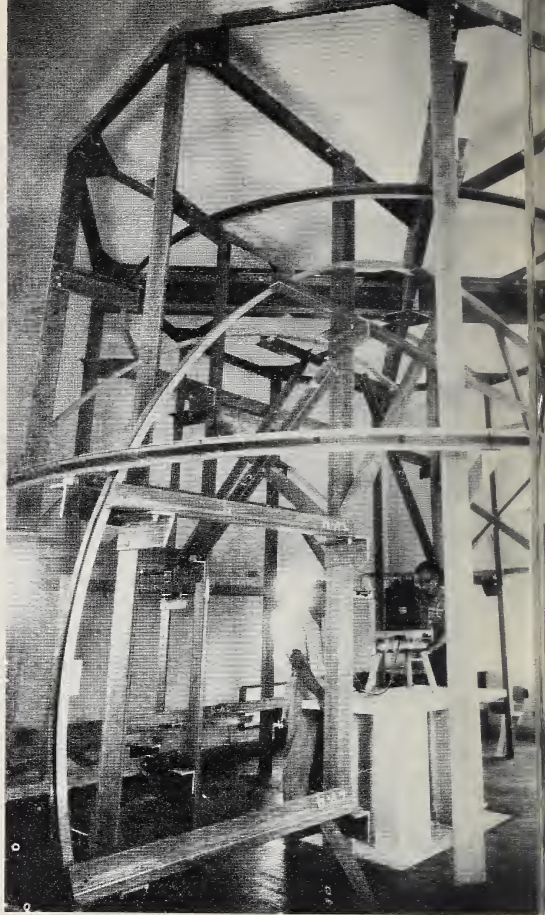
New Uses for Rural Power

If a southern Rip Van Winkle, dozing off in 1936 in the country around Bowling Green, Virginia, were to awaken today, he would hardly recognize his old stamping grounds. New schools, churches, stores, factories, mines, residential suburbs and super-highways have all conspired to transform the familiar landmarks Rip once knew. He would find some of his old friends still clinging to the farmstead, but most of their children would be working at new jobs which electricity has helped to create.

Virginia Electric Cooperative, formed in 1936 at Bowling Green, has been a prime mover in these changes. Its 3,000 miles of line bring power to 12,000 consumers, who use 50 million kwh each year. One-third of this power is used by light industry.

This is part of a nation wide trend. Each year since 1950 over half a million acres of rural land have been converted into housing developments, industries, vacation resorts and the like. Another half-million acres have been replaced by highways, roads, airports and other intensively used public facilities. An additional million acres have been transformed into national and other parks, wildlife refuges and reservoirs.

Throughout the country, as in Virginia, rural electric cooperatives are meeting, and will continue to meet, these new and heavier demands upon their facilities.



Coast and Geodetic Survey scientists use a Fensholt instrument at Fredericksburg Magnetic Observatory, se

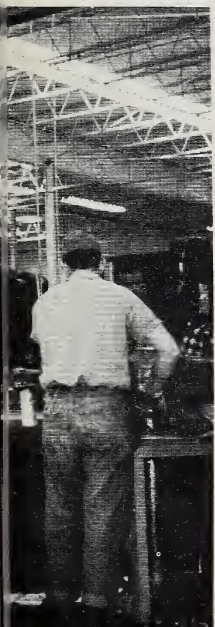
This new Virginia plant manufactures heating duct



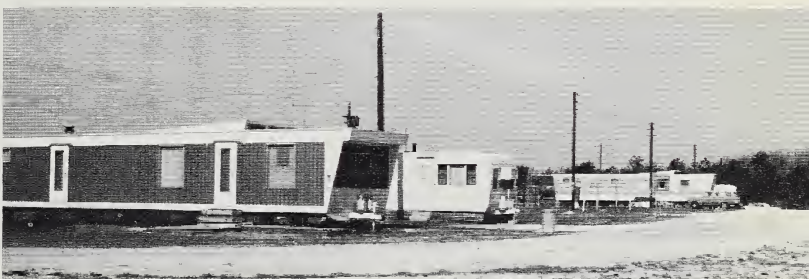


oil to test an instru-
by Virginia Electric.

aid of co-op power.



A modern high school nestles on historic Virginia farmland.



*Influx of new consumers is indicated by trailer camp
near Bowling Green.*

Resort in Piedmont Virginia reflects growing interest in recreation.



Revolutionizing Farm Production Through Electromotion

by J. P. Schaenzer, Agricultural Engineer, REA

The average egg producer of the Nation today grosses about \$3.40 per man-hour from his flock. Out of this he must pay all costs of production. Very little indeed is left to pay him for his hard labor.

Applying concepts of electromotion to the problems of egg and broiler production and to the raising of beef cattle and hogs can do much to improve the profit ratio per man-hour of labor in these farm enterprises. The full use of mechanical equipment to achieve volume production is a first step toward more profitable farming. Other necessary factors are a manager with know-how, quality livestock, the most economical and nutritive feed, the best attainable environment, housing, and arrangement of machinery.

In poultry and egg production, good breeding and quality birds are essential to success. Thirty years ago the average hen in the United States laid only 121 eggs per year. Today she lays 207, and the best flocks average 250 or more eggs per hen per year. The University of Missouri found that the annual labor returns per layer increase as the number of eggs laid per year increase. For the hens producing from 150 to 199 eggs it averaged 70 cents. For those from 200 to 249 eggs the average was \$1.07. But for the hens that laid 250 or more eggs per year the labor return per layer shot up nearly 100 percent to \$2.10.

One of the factors stimulating egg production is the extension of the daylight period by electric light to thirteen hours during the short fall and winter months. Research has found that the

effect of increasing day length is physiological rather than merely a reflection of more time for the birds to eat.

The small farm flock of laying hens is giving way rapidly to large, family-operated, commercial chick farms. Modern, equipped buildings, efficiently organized and managed and requiring little attention, have made this possible.

To reduce the building investment per hen, the population of the laying house has been increased to about one bird per square foot. Previously the space allotment had been 3 square feet per bird. In the solar poultry house designed at Pennsylvania State University, perches, automatic waterers and feeders are placed in tiers over a wire-covered droppings pit. A barn cleaner in the pit removes the droppings. The manure cleaner, ventilating fans, lights and solar heat keep the house dry.

University of New Hampshire studies show that one man can collect 5,000 eggs per hour with a belt conveyor, as compared with 1,100 eggs collected in the same time by hand. In a 10,000 bird laying house in New York, equipped with a motor-driven egg belt, it takes six and one-half minutes to collect a case of eggs.

Dr. G. O. Bressler, Poultry Department, Pennsylvania State University, believes that, with egg collecting completely mechanized, one man can care for from 20,000 to 25,000 laying hens. Closely approximating this figure, an Indiana poultryman has one man caring for each 15,000 layer house. After further mechanization has been added, he expects two men to care for three

houses, or 22,500 birds each. Studies at the University of Massachusetts indicate that the development of egg-handling equipment to transfer eggs directly from the collection belt to a continuous-flow washer would allow one man to care for 16,800 birds in a fifty hour work week.

An automatic egg grading and packing machine has been developed. It is operated by two workers and is capable of cartoning eggs at the rate of 7,200 per hour.

Environment, especially temperature, has considerable influence on egg production. In an insulated house this can be controlled electrically by ventilation. Department of Agriculture experiments have demonstrated that egg production was highest, 75 percent, with the least feed consumed per dozen eggs, at a constant temperature of 55° F. and a relative humidity of 75 percent.

Electromation, coupled with the incentive given to broiler production by the lack of red meat during World War II, shot broiler production up to 1,795 million head in 1960.

Many broilers are electrically brooded, automatically watered and fed. In Arkansas it took 2,300 kwh to brood 10,000 chicks in 1,300 to 1,500 watt, 750-chick hover brooders from January 27 to March 31, in a 40 x 120 foot house. A 2 hp electric grinder-mixer processed a broiler ration and moved feed in and out of storage at 10 cents per ton, plus 53 cents fixed cost, according to a University of Missouri report. Nationwide, growers are producing an average of \$100 worth of broilers with 8.5 hours of labor. This reflects the high degree of electromation which has been achieved in the broiler industry. Even so, pioneer poultrymen are employing advanced techniques to achieve even better results.

Nutrition plays a key role in broiler production. Rations for the years 1927, 1942, and 1960 were fed to mixed lots of both male and female chickens of a cross of the Cornish and White Rock breeds. At nine weeks of age the birds in the 1927 ration fed flock averaged 0.87 lbs. each, and it took 10.28 lbs. of feed to produce one pound of gain. For the 1942 flock the weight was 1.7 lbs., with a feed conversion of 3.19 lbs. For the 1960 group the weight average was 3.11 lbs., and it took only 1.8 lbs. of feed for each pound of gain. One individual male chick in the 1960 group achieved a weight of 4.01 lbs. at nine weeks of age!



In a modern 10,000 birdhouse, highly mechanized, it takes one man only 1½ hours per day to care for them. On this scale one man can care for 60,000 to 80,000 broilers in similarly equipped but larger houses.

Beef cattle farmers are installing more and more electric, automatically-operated equipment to reduce chore time. Water is furnished in stock tanks. Silage is removed from the vertical silo with an electric motor driven silo unloader and dropped directly on, or delivered by conveyor to, a mechanical bunk feeder, which in turn delivers it to the cattle. Chopped

hay also can be fed in bunks or self-feeders. Grain and commercial feeds can be included with the roughage, after they are automatically ground and blended in a farm feed processing plant. The concentrates can be delivered to the feeder by belt, auger, or blower. With a combination of electrically operated equipment, from 200 to 300 beef cattle can be fed in 20 to 30 minutes per day. One Michigan beef cattle feeder fed and watered 400 head in 17 minutes for each feeding during a single recent month.

Electromation has greatly lightened the labor and increased the output per man-day in hog production. The best hog growers, who are highly mechanized, are producing a 200-pound hog in 30 to 40 man-minutes. (This does not include the time spent for maintaining the sow herd, nor that for the pig up to weaning time.)

At the University of Illinois, electrically controlled equipment has been assembled and installed for feeding, cleaning, and disposing of waste for a confined hog finishing system. Feed preparation is automatic. From bulk storage, the grain and other ingredients are delivered to a blender-grinder and then by conveyor to the hog feeders. Floor cleaning is done with two high pressure water jets located just above the floor at the ends of a revolving boom that circles the 21½ foot-diameter exercise area every 2½ minutes. A 2 hp pump delivers 10 gallons of water per minute at 70 lbs. pressure. A time clock controls the number of on-and-off periods. Manure and other wastes are flushed into a center four-inch drain discharging into a 500-gallon septic tank and drain field. Drinking water always is available to the hogs from fountains. Electric heaters keep it from freezing.

An Ohio farmer has 20 sows of his herd farrowing each month with 2,000 hogs going to market annually. Corn

and other ingredients are ground and mixed with electric motor driven equipment and then hauled by a 1½ ton truck and augered into self-feeders, all in 45 minutes. Next, he will install a ¼ mile auger which will convey the compounded feed to the self-feeders and eliminate the hauling.

Fattening hogs must be kept cool for best gains. Oklahoma State University determined the effect of shade with and without sprinklers on 34 pregnant sows before farrowing. The seventeen sprinkled with water farrowed 10 live pigs per litter that weighed 5 pounds more than the 7.7 live pigs farrowed by the sows not sprinkled. At weaning time the average number of pigs raised, 7.66 per sprinkled sow, weighed 306 pounds, as compared with 221 pounds for the 5.71 pigs per litter from the sows not sprinkled.

Heavy, growing, fattening hogs make the highest gains at a temperature of 60° F. and lighter feeding pigs of 100 pounds at about 70° F. Electric heating cable, 3.5 watts per linear foot, is used by many Illinois hog growers to warm the floors of farrowing houses. From 30 to 40 watts per square foot is recommended.

It seems inescapable that, although electronic devices have been used sparingly on the farm up to the present, they will be employed extensively in the farming operations of the future. Some specialists predict that the day will come when computers, by remote control, will perform such jobs as feedings, irrigation, fertilizing, and milking. For dairy cattle, computers might control automatic milking of the cows, record each animal's milk production and health, supply the feed in both the correct amount and with the required nutrients, and provide the best environment. Any further extension of electromation is difficult to conceive. □

National Farm Safety Week

In cooperation with the National Safety Council and other organizations, the Department of Agriculture sponsors National Farm Safety Week—this year on July 22 to 28.

Farm population in 1960 was 3.7 percent of the U. S. total population, but farm people suffered 13 percent of the 38,200 motor-vehicle deaths and 13 percent of the 1,400,000 nonfatal motor-vehicle injuries.

REA borrowers can prevent death and suffering by continuing to insist that their staffs use safe driving and work procedures at all times. The first death of 1962 among employees of REA borrowers occurred when a meter reader lost control of his service vehicle and was crushed by it when it tipped over. He was not wearing a safety belt and the vehicle had faulty brakes.

Editors Visit REA



New bonds of understanding and friendship were forged during a visit to REA headquarters in Washington, D. C., by 17 editors of publications issued by State associations of rural electric cooperatives. Talks by Administrator Norman M. Clapp (shown above), Deputy Administrator Richard A. Dell, and Information Director William E. Spivey highlighted the two-day visit. Present were John Ford, Alabama; Dale Gibbs and Ted Hoffman, South Dakota; Joseph P. Gaffigan, Illinois; Vern Orton, Indiana; Avery T. Jenkins, Kentucky; Don Newton, Mississippi; Homer A. Hill, Missouri; Lucille A. Clema, Nebraska; Richard Pence, North Carolina; Clint Miller, Oklahoma; Kirby Able, South Carolina; John E. Stanford, Tennessee; Bill Lewis, Texas; Fletcher Cox, Jr., Virginia; Les Nelson, Wisconsin; and Conrad Blomberg, North Dakota.

NEWS IN BRIEF...

TEXAS: The Bailey County Electric Cooperative held a workshop last March at which top specialists discussed various aspects of soil and water conservation. In both Bailey and Cochran Counties pumpage is exceeding recharge, making conservation a vital problem. The cooperative furnished a complimentary noon meal to the 200 farmers and 30 representatives of industry and technical agriculture who attended the meeting in Morton.

WYOMING: A downward adjustment of its rates by Carbon Power and Light has encouraged farm and town consumers to increase their kwh use by nearly 50 percent, and small commercial users to almost double their consumption of electricity.

VERMONT: In order to protect its consumers who are raising Christmas trees near its lines for sale, Vermont Electric Cooperative will put up, on request and without cost, posters informing cutting and spraying crews that this is a "Restricted Area. No Cutting or Spraying. Right of Way Maintained by Member."

SOUTH DAKOTA: After 9 years as a job training and safety instructor, serving 33 electric cooperatives in this State, Marvin O. Nelson has joined REA as a field safety representative.

WISCONSIN: After 18 years of similar experience in Wisconsin, H. C. Potthast has also joined the REA safety program.

WASHINGTON: A feature of the 25th annual meeting of the Inland Power and Light Company held at St. John was the burning of the cooperative's mortgage note on its first loan

from REA. The loan for \$455,000 has been paid off in full.

KENTUCKY: In order to attract large industry, Cumberland Valley Rural Electric Cooperative Corporation has designed a new rate. A coal company that is opening a mine north of Cumberland to produce 5,000 tons of coal daily, and which may use 1,412,000 kwh monthly, will thereby save almost \$250,000 over previous rates during the next 10-year period . . . Shelby Rural Electric Cooperative Corporation is making its first retirement of patronage capital—to approximately 4,000 members for the years 1948-51. Payments will total about \$66,000.

WASHINGTON, D. C.: According to statistics released here by the U. S. Independent Telephone Association, the independent telephone industry, as of the end of 1961, was comprised of 3,035 companies, serving 10,700 exchanges and 12 million telephones, 92 percent of them dial-operated. Plant investment during 1961 increased from \$4 to \$4.5 million, and revenues from \$1,028,500,000 to \$1,148,000,000. These independents employ 100,000 persons.

ILLINOIS: In a reversal of the usual pattern, managers, directors and lawyers from six rural electric cooperatives held a panel discussion to acquaint candidates for state and national legislatures with rural co-op goals and philosophy. After the presentation the candidates were allowed a few minutes each to express their views—favorable in each case—on the subject.

Telephone Service

(Continued from page 4)

it are acceptable, the higher grade of service should be provided.

Whenever upgrading of service necessitates the addition of cable plant and central office equipment, those subscribers receiving less than 1- and 2-party service should be surveyed to determine whether or not 4-party service could be eliminated. At that time it would be wise to take a close look at the plant records and estimate what additions would be necessary to upgrade rural service. The trend in decreasing rural establishments should be carefully examined.

An actual door to door survey would be the only reasonable way to determine the necessity of offering 4-party service in a base rate area where 1- and 2-party service is generally acceptable. Certainly, when all existing base rate area service comes under the 1- and 2-party class, application should be made to the appropriate regulatory body to eliminate 4-party service from the particular exchange rate schedule.

Yet surveys are not always the answer. Our experience would indicate that you must survey and then make an intelligent guess as to what the rate of upgrading will be. We have found in recent surveys of equally progressive communities, one area requested 4-party service by a large majority while the other community requested 1-party service. There is no doubt in my mind that we would be in trouble if we did not make some basic provision for upgrading in the area where the majority requested 4-party service. By basic provision, we do not mean to provide all of the equipment necessary to furnish 1-party service. In this case, we intend to leave reasonable space in the central office equipment for future

additions, and perhaps stub an extra cable from the main frame to the outside of the central office where it will be accessible for additions in the future.

E. R. Britt, Manager, Pineland Telephone Cooperative, Inc., Metter, Georgia, says:

In upgrading service of any type, the main problem encountered by any telephone company is the additional cost. Here in Georgia we are under the jurisdiction of the Georgia Public Service Commission, and it governs our rates. If these are too high, some of our rural subscribers would be priced out of the market; therefore we must always keep the investment reasonable.

At the time our Cooperative was incorporated, adequate telephone service was not available in the small towns and rural areas. We have given modern dial telephone service to both, but I firmly believe that the grade of telephone service can be much improved by going to a 4-party rural service.

One of the biggest complaints we now have concerns the excessive use of party lines. We cannot conscientiously offer telephone service and turn right around and restrict the use of it. We would think that a filling station operator was some kind of eccentric if he sold us a tank of gasoline and asked us not to use it.

Several years ago, we planned to offer 4-party service in two of our nine dial exchanges. At that time, if the job had been done exchange by exchange, the cost would have been reasonable, we thought. This plan was dropped because we made the mistake of asking the people if they wanted a rate increase for this service. It was intended to eliminate 4-party service within the base rate area and offer flat 4-party rates in the rural section.

Mr. Frank Renshaw, REA Assistant Administrator, made a statement at a recent school of instruction of the Georgia Telephone Association that I think is a challenge to everyone in regard to 4-party service in rural areas. He stated, "Ten years from now, no 8- or 10-party service will be available. Don't let your company be the last to eliminate it."

Richard D. Crowe, Manager, Dos Palos Telephone Co., Inc., Dos Palos, California, says:

Our thoughts on this subject are mixed. We offer first the pro, then, in parentheses, the con arguments.

1. Fewer people on a line generally means better service and fewer complaints. (But not necessarily. It only takes one chronic abuser of a party line to make trouble—and most party lines have that one. More children are using phones; therefore holding times and calls will continue to increase.)

2. The trend is toward upgrading, in keeping with higher standards of living and increased usage. (However, there will always be a demand for low cost service. The differences between 1- and 2-party service are so slight that the 1- and 4-party services should be retained. The same holds true regarding 5- and 8-party services; the difference is not enough to justify 5-party service.)

3. Public service commissions and the public in general like the sound of "higher grade service." (Perhaps, but is the public willing to pay the bill? Anyone who wants higher grade rural service should be willing to pay BRA rates plus mileage. This puts the charge squarely on those people who are creating the higher costs.)

4. Since 1-party service is the ultimate, why not help the evolutionary process along by offering 5-party service as soon as possible? (With increases in usage, it is probable that in a short time 5-party service will be no better relatively than 8- party is now. 8-party service will sell more 1-party service—faster—than a 5-party offering. If the day comes when most people in a rural community have 1-party service, then it can be offered on an adjusted mileage flat rate basis to everyone in the area with no loss of revenue to the company.)

5. Upgrading means improved toll and local usage to the customer, more efficient use of facilities, fewer BY's, less circuit lost-time, fewer problems of correct identification on toll calls (either DDD or manual), simpler central office equipment and station wiring. (No argument on most of these. However, upgrading also means that higher overheads will generally prevail—and somebody will have to pay the bill!)

AGRICULTURAL STATISTICS, 1961

Published annually since 1936, this volume provides a wealth of useful statistics on agricultural production . . . prices . . . supplies . . . costs . . . income . . . land use . . . farm ownership . . . food consumption . . . freight rates . . . fisheries . . . forestry . . . foreign trade . . . and many more. Send requests for copies, at \$1.75 each, to Superintendent of Documents, Government Printing Office, Washington 25, D. C.

New and Revised REA Bulletins . . .

NEW BULLETINS:

385-3 (4/27/62), "Closeout Documents for Special Equipment Contracts." Describes procedure to follow and documents to prepare in connection with the closeout of Special Equipment Contracts, REA Form 397.

REVISED BULLETINS:

381-2 (4/27/62), "Telephone System Construction Contract, Labor and Material, REA Form 511." Describes principal changes recently made in the Telephone System Construction Contract, REA Form 511.

345-17 (5/9/62), "REA Specification for Plastic Insulated Line Wire." Reflects changes in requirements for the polyethylene insulation of this wire.

400-5 (5/10/62), "Operating Conditions Endangering Loan Security." Describes in greater detail situations requiring evaluation and action in the interest of REA loan security.

SUPPLEMENTS AND PARTIAL REVISIONS TO REA BULLETINS:

44-2, 345-1 (3/28/62), "Specification for Wood Poles, Stubs, and Anchor Logs, and for Preservative Treatment of These Materials to be Purchased by REA Borrowers, Electric and Telephone." Lists documents required to cover shipments of insured warranted poles, and check of supplier's brand recommended by REA when poles are received.

U. S. CENSUS OF HOUSING, 1960

Every 10 years the Bureau of the Census, Department of Commerce, issues these comprehensive surveys of housing conditions in every State. REA-borrowers will find valuable material in these reports for their individual State. Contents include plumbing facilities, such as water supply, toilet and bathing facilities, number of bathrooms; equipment, such as air conditioning, clothes dryer, clothes washing machine, home food freezer, radio and television sets, availability of telephone; cooking fuel, heating fuel, and water heating fuel. Reports range in cost from 45 cents to 2 dollars. For further information, write Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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- 2 A Message from the Administrator*
- 3 Managers Discuss: When To Upgrade Telephone Service*
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